

## § 25.1503

## 14 CFR Ch. I (1–1–13 Edition)

### OPERATING LIMITATIONS

#### § 25.1503 **Airspeed limitations: general.**

When airspeed limitations are a function of weight, weight distribution, altitude, or Mach number, limitations corresponding to each critical combination of these factors must be established.

#### § 25.1505 **Maximum operating limit speed.**

The maximum operating limit speed ( $V_{MO}/M_{MO}$  airspeed or Mach Number, whichever is critical at a particular altitude) is a speed that may not be deliberately exceeded in any regime of flight (climb, cruise, or descent), unless a higher speed is authorized for flight test or pilot training operations.  $V_{MO}/M_{MO}$  must be established so that it is not greater than the design cruising speed  $V_C$  and so that it is sufficiently below  $V_D/M_D$  or  $V_{DF}/M_{DF}$  to make it highly improbable that the latter speeds will be inadvertently exceeded in operations. The speed margin between  $V_{MO}/M_{MO}$  and  $V_D/M_D$  or  $V_{DF}/M_{DF}$  may not be less than that determined under § 25.335(b) or found necessary during the flight tests conducted under § 25.253.

[Amdt. 25–23, 35 FR 5680, Apr. 8, 1970]

#### § 25.1507 **Maneuvering speed.**

The maneuvering speed must be established so that it does not exceed the design maneuvering speed  $V_A$  determined under § 25.335(c).

#### § 25.1511 **Flap extended speed.**

The established flap extended speed  $V_{FE}$  must be established so that it does not exceed the design flap speed  $V_F$  chosen under §§ 25.335(e) and 25.345, for the corresponding flap positions and engine powers.

#### § 25.1513 **Minimum control speed.**

The minimum control speed  $V_{MC}$  determined under § 25.149 must be established as an operating limitation.

#### § 25.1515 **Landing gear speeds.**

(a) The established landing gear operating speed or speeds,  $V_{LO}$ , may not exceed the speed at which it is safe both to extend and to retract the landing

gear, as determined under § 25.729 or by flight characteristics. If the extension speed is not the same as the retraction speed, the two speeds must be designated as  $V_{LO(EXT)}$  and  $V_{LO(RET)}$ , respectively.

(b) The established landing gear extended speed  $V_{LE}$  may not exceed the speed at which it is safe to fly with the landing gear secured in the fully extended position, and that determined under § 25.729.

[Doc. No. 5066, 29 FR 18291, Dec. 24, 1964, as amended by Amdt. 25–38, 41 FR 55468, Dec. 20, 1976]

#### § 25.1516 **Other speed limitations.**

Any other limitation associated with speed must be established.

[Doc. No. 2000–8511, 66 FR 34024, June 26, 2001]

#### § 25.1517 **Rough air speed, $V_{RA}$ .**

A rough air speed,  $V_{RA}$ , for use as the recommended turbulence penetration airspeed in § 25.1585(a)(8), must be established, which—

(1) Is not greater than the design airspeed for maximum gust intensity, selected for  $V_B$ ; and

(2) Is not less than the minimum value of  $V_B$  specified in § 25.335(d); and

(3) Is sufficiently less than  $V_{MO}$  to ensure that likely speed variation during rough air encounters will not cause the overspeed warning to operate too frequently. In the absence of a rational investigation substantiating the use of other values,  $V_{RA}$  must be less than  $V_{MO}$ —35 knots (TAS).

[Doc. No. 27902, 61 FR 5222, Feb. 9, 1996]

#### § 25.1519 **Weight, center of gravity, and weight distribution.**

The airplane weight, center of gravity, and weight distribution limitations determined under §§ 25.23 through 25.27 must be established as operating limitations.

#### § 25.1521 **Powerplant limitations.**

(a) *General.* The powerplant limitations prescribed in this section must be established so that they do not exceed the corresponding limits for which the engines or propellers are type certificated and do not exceed the values on which compliance with any other requirement of this part is based.